Words Names and Phrases in Medicine.

AN ADDRESS

DELIVERED AT THE OPENING OF THE

COURSE OF LECTURES IN PHYSIOLOGY

IN THE

UNIVERSITY OF MANCHESTER.

BY

WILLIAM STIRLING, M.D., D.Sc., LL.D.,

Professor of Physiology and Histology, Dean of the Medical Faculty of the University of Manchester.

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MAN THE CHEF D'ŒUVRE OF CREATION.

You come to the study of Physiology presumably with a working knowledge of Physics, Chemistry, and Biology, with some acquaintance with Anatomy and Embryology. I take it that you are well equipped to begin the study of this fascinating and withal practical subject. It presents the problems that are manifested by all living beings in action and in relation to their environment. Moreover, we shall have to consider and analyse the functions of the individual parts of living organisms—more especially animal organisms—their interdependence, and the means by which the vital activities are controlled, directed and governed. It would not be profitable for us to consider Man by himself. We must extend our view and consider him also in relation to other animals. As you wish to become medical men, it behoves us also to link up normal life and functions with those perversions or modifications of vital activity which are denoted by the word "*disease.*"

Man has been described as a Microcosm. Cruveilhier, the great French pathologist, spoke of Man as the "*Chef d'œuvre de la Création.*" Notwithstanding the complexity of the higher animals, considered from a physical, structural or functional point of view, certain facts stand out clear and distinct in all living organisms, viz., the extraordinary integration of their

several parts, the harmony of their working. In health—and they do not chafe in the working—all goes on silently and without noise, while there is complete adaptation to the environment, be it air, water, or earth. The one part of the body cannot say to the other I have no need of thee. Organs, however insignificant they may seem, may prove to be of paramount importance in the economy, as has been proved by the recent discoveries regarding the functions of such little known and apparently unimportant organs as the pituitary body, the pineal, thyroid and thymus glands, not to mention others whose functions and history we are just beginning to discover. The interdependence of organs and smooth working of the units go to make up the organism I can perhaps better illustrate by the well-known passage from Coriolanus: —

ROMAN SENATORS AND MUTINOUS CITIZENS.

Men. There was a time, when all the body's members
Rebell'd against the belly; thus accused it:
That only like a gulf it did remain
I' the midst o' the body, idle and inactive,
Still cupboarding the viand, never bearing
Like labour with the rest, where the other instruments
Did see, and hear, devise, instruct, walk, feel,
And, mutually participate, did minister
Unto the appetite and affection common
Of the whole body. The belly answered,—
First Cit. Well, sir, what answer made the belly?
. . . . . .
Men.
'True is it, my incorporate friends,' quoth he,
'That I receive the general food at first,
Which you do live upon; and fit it is,
Because I am the store-house, and the shop
Of the whole body: But, if you do remember,
I send it through the rivers of your blood,
Even to the court, the heart,—to the seat o' the brain;
And, through the cranks and offices of man,
The strongest nerves, and small inferior veins
From me receive that natural competency
Whereby they live: And though that all at once,
You, my good friends' (this says the belly), mark me—
First Cit. Ay, sir; well, well.

Coriolanus, i. 1.

The body corporate is like the body political—all parts must work in harmony if the organism is to persist, extend, and prosper to the highest possible extent.

THE BODY AS A HABITATION AND A PHYSICAL MACHINE.

The body has been compared to a house, a city, a temple, a dwelling-place and a habitation.

It is provided with windows and other outlook stations, some receiving information from objects near at hand or coming in contact with it, while others—the distance receptors—are affected by impulses or waves of various kinds that come from afar. Messages of various kinds received through our sense-organs are sent along our nerves to specific centres in the brain where they are received, recorded and analysed. By means of the executive organs the necessary precautions are taken to ward off the attacks of an enemy. In other cases the protective arrangements are purely automatic and belong to that fundamental group of nervous actions designated by the word "reflex."

INTERNAL COMBUSTION MECHANISM.

Looked at from another point of view, one of the most remarkable features of the higher animals is the constancy of their temperature under the most varied climatic conditions. The body can regulate its own temperature with perfect precision. It has no central heating station, though it has millions of active furnaces in all parts of the body, each one a living active cell, producing during its active life a small amount of heat, which is carried and distributed by the blood stream. The living cells do not use up their fuel wastefully; such as is too often the case in our steam engines and in our fire-grates. The living cells regulate their own nutrition, both as regards the intake and output of matter and energy. The great stride forward in the construction of locomotive machines, as represented by internal combustion engines, has rendered aviation by Man possible, while it has also led to the increased perfection of the motor-car. The internal combustion principle is an approach to what obtains in the animal body. The muscles are the motor apparatus. In the motor apparatus itself is generated the energy for the production of heat and movement. The blood stream supplies both the material, fuel and the energy, and into it is discharged the waste products and the superfluous energy which is used to heat other parts of the organism.

The liver also is a great source of animal heat, besides being one of the most elaborate chemical factories in existence. There are no unemployed units, and if there are unemployed cells, they are only resting and recuperating. Nature makes short shrift with unemployable and useless corpuscles.

NATURE'S RESERVES.

Moreover, Nature's reserves in the individual are extraordinary. Apparently without the slightest effort, and by purely automatic methods, she can meet the demands made on her. She can double the number of beats of the heart, accelerate the respirations, and increase the supply of the digestive juices to meet the demands that are made—often quite unexpectedly. "Ready, aye ready," is Nature's motto. Her magazines are always well stored, and her forces are always at attention and mobilised for action to resist invasion, paralyse by subtle means the aggressor, or place at the disposition of the whole organism that energy which, properly directed, can save the body, in whole or in part, from destruction.

Her writs run in the blood itself—call them Hormones or Chemical Messengers—but when time is of importance and the call for supplies or effective aid is pressing, she has her own incomparable telegraphic system, by means of which all kinds of messages are sent inwards or outwards to or from the uttermost parts of the body. There is no outlying territory which is not connected with the dominant and directive centres. Moreover, in the highly evolved central system there are special local telegraphic communications, comparable to local telephone arrangements in a modern large well-appointed warehouse. This saves an enormous amount of up and down "stair work." Else how could the segmented yet integrated spinal cord so completely, efficiently and swiftly perform its protective and other functions? Or how could the special centres in the brain which receive messages each from its specific sense-organ, such as the eye, ear, nose or tongue, be correlated with the motor executive organs.

MECHANICS, HYDRAULICS, PNEUMATICS, AND BIO-CHEMISTRY.

Looked at from a mechanical point of view we shall have to consider the heart as a double force pump and suction pump, with valves which regulate the direction of the blood stream, and which work automatically and with perfect precision. There are stop-cocks which regulate the supply of blood to the tissues, stop-cocks controlled by a special set of nerves, which can diminish or increase the supply of blood according to demand. The blush on a maiden's cheek, as well as the dilatation of the blood vessels of an active glandular organ such as the stomach or pancreas, may be considered from several points of view. The increased supply of blood to an active organ is a prime necessity for its sustained activity, and wonderful are the mechanisms by which this result is obtained. The

phenomena of the circulation, the pressure and the velocity of the blood stream in the several sections of the vascular area offer problems which will test the knowledge of hydraulics which you have acquired elsewhere. The elucidation of the respiratory processes demands a knowledge of pneumatics as well as an intimate acquaintance with the facts of absorption of gases, osmosis and allied phenomena, while the digestive processes are largely chemical, but chemical in the sense in which an intimate knowledge of what is called "Bio-chemistry" is an essential factor. Thus you see how valuable, indeed how necessary, is a thorough preliminary training in Physics and in Chemistry if you are to find yourselves in a position to profit by the instruction offered in Physiology.

In the movements of the parts of the limbs, and also in other parts of the body, you will be able to apply your knowledge of Mechanics in the study of the complex actions of levers.

In the intestinal canal there are valves, sluices, and tubular aqueducts. When we come to the minute structure of organs, mechanical problems of the greatest complexity are presented to us. I cannot perhaps represent this to you more forcibly than by a statement of some facts regarding the tubular system of the kidneys, organs specially concerned with maintaining the physico-chemical equilibrium of the blood as regards its contents of waters, effete organic nitrogenous matters, and inorganic salts.

TUBULAR SYSTEMS.

Each human Kidney contains roughly 450,000 microscopic filters, making 900,000 in all, and a corresponding number of primary drainage tubes. The pig's kidneys have at least 1,000,000 such filters. In connection with this filtering apparatus, in man there are at least 4,500,000 microscopic vessels inside the filtering apparatus, and these in their turn give rise to 11,250,000 intra-glomerular capillary vessels through which the filtration of water takes place. This calculation, based on ascertained facts, takes no cognisance of the remainder of the tubular system of the kidney and its blood supply—which is concerned in the secretion from the blood—and also with the elaboration from the same source of certain substances which pass into the stream of water passing along the complicated system of drainage tubules. The hydraulic problem of filtration is solved with marvellous exactitude by the 22,000,000 of capillary tubes with which the kidneys are provided. I say nothing of the many millions of workers—the cells—which

line the various parts of the complicated system of urinary tubules. Some people wonder why on occasion—all too oft in fact—owing to the bad treatment these cells receive they are unable to do their duty, with disastrous results to the organism as a whole. In fact, the kidneys in some people are perhaps the most abused and overworked organs in the whole economy.

MILLIARDS OF CHEMICAL FACTORIES.

A more formidable problem still confronts us in the study of the Liver—the largest gland in the body and weighing about $4\frac{1}{2}$ pounds on an average. It is an immense aggregation of cells, all of which are seemingly alike in general structure and are supposed to have the same multiplicity of functions. The cells are arranged in lobules, each lobule being about a millimetre in diameter, so that there are over 1,100,000 similar chemical factories united in one great chemical and metabolic factory, all enclosed within one common capsule. The total number of workers or cells has been calculated as equal to 350 milliards, supplied by 100 milliards of tubular blood vessels, and with a drainage system for the bile alone of 700 milliards of microscopic bile capillaries.

PNEUMATIC PROBLEMS.

The Lungs present us with other problems. The air cells may amount to 300,000,000, giving a superficial area exposed to the air and the blood film in the inmost recesses of the lungs equal to 200 square yards, through which the exchanges of the gases of the air and those in the blood take place. In health, gases but no fluids, pass in both directions through this incomparable membrane. If the membrane becomes pervious, as it does in pneumonia and some other diseases, the respiratory area is greatly diminished and death may result, though this is not the usual cause of death in pneumonia or inflammation of the lungs. The kidney membrane, unlike the pulmonary membrane, permits the free escape of water. You will see what entrancing problems are opened up by the study of the properties of immensely thin microscopical membranes.

I say nothing at the present time about the eye and its wonders, its imperfections and its practical utility in spite of these normal shortcomings, or of the ear with its recipient drum and its wonderful lymph-bathed labyrinth associated spatially with those organs of equilibration known as the semicircular canals.

PHYSIOLOGY A PRACTICAL AND ENTRANCING STUDY.

There lies before you therefore an enchanting field of study, which it will be my privilege to try to make both interesting and profitable to you. I have never yet come across a student who did not like the subject of Physiology when it is set before him in an attractive manner. Above all, it is a thought-compelling subject, and one which gives us pause in any speculations we may make regarding the beginnings of function and form as manifested in animate Nature.

INTRODUCTION OF NEW WORDS.

After this short introductory sketch of the "rare and refreshing" problems which await your attention during the next few months, it occurred to me that it might be both interesting and profitable to you if I attempted to give you a few observations regarding some of the words and phrases used in Medicine which you have already heard, or will hear in the course of your studies. I hope you will add many of them permanently to your mental Armamentarium during your joyful years of Medical Study. There is an old French expression that comes from the time of the immortal Rabelais, and it is "Esbaudisez Vous." I commend it to you.

The history of the coming of new words, the introduction of words and change of meaning of words already in existence, and the transference of words from other languages is both a fascinating and a profitable study, and this applies with special reference to Medicine. A medical man should know something —in fact a great deal—about the history not only of his own language, but if he is to bear himself worthily as a member of a learned profession, he should know something also of the history of his profession, and of its great pioneers in ages past and recent, as well as of the history and meaning of that vast vocabulary of names and technical terms with which this subject abounds.

INTRODUCTORY.

In these Isles, when Roman Civilisation was destroyed, and when their Celtic inhabitants were driven westward and many of them were given to the sword, the invaders brought their own language with them, and made but little use either of Roman or Celtic words. In such town-names as Manchester. Dorchester, Doncaster, and Chester—the oldest being Colchester —and many other similarly-constructed words, we have the Latin word "Castra" represented, one of the few Latin words

remaining in our language from that early period in the strange eventful history of this sea-girt isle. From the early Celtic also few words survive. In the sixth and seventh centuries, when the Angles and the Saxons who had settled in Britain were converted to Christianity, the Christian missionaries brought with them their own vocabulary, and thus there came an infusion of new and foreign words. These missionaries, however, had a veritable genius for altering, modifying, and adapting to new meanings the words already in use. These Christianising pilgrims brought with them many words from Greek and Latin, and even from Hebrew itself—words concerned with their religious vocation, such as Altar, Temple, Candle, Archbishop, Pope, and Psalms. The Greek word "Aggelos," or "messenger," gave us our word Angel, and "Diabolos," or "slanderer," became modified to the all-too-familiar word Devil. The Irish construed the word "Cross" from the Latin "Crux," and this be it remembered was at a time when Ireland was already a land of learning.

EXOTIC WORDS. CHANCELLOR.

When the civilisation of Europe travelled westward, and the Bible was introduced, a whole series of new words were added to the language—words of Eastern origin, such as those of exotic plants and animals and certain minerals. To this period we owe the introduction of such words as cassia, myrrh, parsley, asparagus, radish, rose, lily, pine, box, hyssop, cedar, capon, trout, turtle, camel, lion, coral, amber, carbuncle, diamond, and many others.

The high and mighty office of "Cancellarius," or "Chancellor," sprang from lowly beginnings. The word itself was introduced before the Conquest, probably by Edward the Confessor. This word, we are told by Pearsall Smith, "for all its present dignity, is derived ultimately from *Cancer*, the Latin word for Crab." How the *Cancellarius*, a petty officer of the Eastern Empire, stationed at the bars or crab-like lattices (*Cancelli*) of the law courts, rose from an usher to be notary or secretary and came to be invested with judicial functions, and to play a more important part in the Western Empire, belongs to European, and not to English history; but the word is of interest to us as being one of the three or four French terms that found their way into English in Anglo-Saxon times. You will recall the fact that the word *Cancellus* is still applied to the irregularly-shaped spaces in bone, containing the red marrow, while the word *Cancer* itself now means one of the most fatal diseases with which the surgeon has to contend. The word *Law*,

which first appears in the late Anglo-Saxon period, is "a memorial of the fact that England was once partly settled and ruled by Danes."

To the Crusaders we owe the introduction of such words as saffron, scarlet, azure, and orange, and even the word cotton itself, while the Eastern drug "hashish" is responsible for our word assassin.

The Norman Conquest brought about a radical change, but it was not till the XIV. Century that there existed what might be called a standard English.

The XIII. Century saw the introduction of the word ostrich, which however is a hybrid word; the XIV., elephant, crocodile, hippopotamus, rhinoceros, tiger, hyena, and the fabulous unicorn or monoceros, the salamander which lived in the flames, and the serpent—amphisbœna—which had a head at either end.

MEDICAL LORE.

When we come to medical terms, the Greek doctrine of the "Humours" was introduced in the XI. and XII. Centuries. There were four humours—blood, phlegm, yellow bile and black bile—and on these were based the code of temperaments —sanguine, phlegmatic, choleric and melancholic—a doctrine which still finds its representation in daily speech and action.

Akin to this is the introduction of the idea of "Spirits"—Animal, Vital and Natural.

Mr. L. P. Smith tells us that already in the XIII. Century such words as *medicine*, *ointment*, *poison*, *powder*, *diet*, *physic*, *physician*, *dropsy*, *gout*, *malady*, had "approximately their modern and scientific meanings." This vocabulary was increased in the XIV. Century by the addition of the words "*apothecary*, *artery*, *pore*, *vein*, names of drugs like *opium* and of diseases such as *asthma*, *quinsy*, *palsy*, and *dysentery*." Those of you who wish to pursue the question as to how far mediæval thought and the science and culture of the Middle Ages have left their impress on the English language will find apt illustrations in "The English Language," by L. Pearsall Smith.

Hypochondriacal and its abbreviation "*Hipped*" have reference to that part of the body called the hypochondrium, the region from which was supposed to come the "black bile." Our word *rheumatism* had a singular origin. It was used to indicate a rheum or flow of something to an infected part. Even to the present day a cold in the head or Coryza is called in French "Rheum du Cerveau," or a flux from the brain, under the supposition that the discharge from

the nostrils at the onset of the affection represents a discharge from the brain itself.

The Astrologers gave us the word *lunatic*, which came with the XIII. Century, from the notion that the moon influenced the mental condition of mortals. The influence of the planets gave us Saturnine, Mercurial, and even the word "*Influence*," which is still represented in medicine of to-day by the Influenza. The words Alembic, Alkali, Arsenic are words used by the Alchemists. Ammonia reached us from the Greek through Egypt. Alcohol has a singular derivation. It comes from *Al* and *Kohl*, which means the fine black powder known as sulphuret of antimony, which the Egyptian ladies used to darken the margin of the eyelids. From a fine powder it came late in the Eighteenth Century to mean "spirit," from which the transition was easy to alcohol—a spirituous liquor.

When we compare the French language with our own, we find that with few exceptions, every word in the French vocabulary comes direct from the Latin. The Roman invasion and possession of Gaul led to the almost complete disappearance of pre-Roman Celtic words. With us the early invasion of the Saxons from the regions around the mouth of the Elbe and adjoining lands obliterated nearly every trace of the Roman occupation of Britain so far as words are concerned. With the later advent of the Normans—themselves of Northern origin—our language thus acquired a double origin.

SOME ZOOLOGICAL NAMES.

When, however, we pass to a more systematic examination of the meaning, derivation and relations of some of the words most familiar to the student while studying those subjects which are ancillary to medicine let us begin with Zoology.

PROTEUS. AMŒBOID MOVEMENT.

One of the first of the lowly organisms introduced to the notice of the student of medicine is the Proteus Animalcule or Amœba. Proteus was a son of Neptune (Oceanus) by the nymph Phœnice, or, if you prefer the Latin name, the Nereid Thetis. He was the keeper of the Sea-Calves, or seals, and other monsters of the sea—in fact, he was not only the guardian of the subjects of Neptune, but he was a prophet and had the power of looking into the future. He came ashore with his seals at midday to bask in the sunshine, and if he was caught and firmly held, he returned to his original form and was constrained to prophesy to his captor. He could convert himself into all

sorts of shapes, could flow like water or burn like a fire, so that from these "quick-change" performances he gave us our word Protean—a name synonymous with change. From Amœba we derive our phrase "*Amœboid movement.*" The observation of living Rhizopods, represented by Amœba, was begun by Roesel in 1755, who was the first to describe and figure an Amœba.

HYDRA AND HERCULES.

As we ascend higher in the scale perhaps more interesting is Hydra, renowned in mythic story as the nine-headed Hydra of the Lernean swamp, near Argos, which was slained by Hercules—an exploit that constituted the second of his twelve labours. It was Linnaeus who suggested the name Hydra, for this monster, which had nine heads, the central one of which was immortal. When one head was knocked off two new ones grew in its place. With the assistance of his faithful servant Tolans, and in spite of the joint activities of Hydra and the gigantic crab which came to his aid, Hercules succeeded in burning away the heads of the monster, and he buried the ninth or immortal head under a huge stone. In view of what we know now about the part played by the bile in relation to poisons, it is interesting to note the legend that Hercules—or, as he was called by the Greeks, Heracles—poisoned his arrows with its bile. The wounds inflicted by such poisoned arrows became incurable. The curare poison derived from certain plants is employed at the present day to poison arrows used in the chase or in war.

MEROTOMY. POLYPS.

The Genevese, Abraham Trembley (1700-1784), when a resident at The Hague, studied the Hydra. He cut the stalk in two, to determine if it was plant or animal—to see if the halves would live when separated as many plants do. After several days new tentacles grew on the cut end of the basal half, so that there were two complete organisms instead of one. The Hydra could be multiplied by fission—by cuttings—like a plant. This we now call Merotomy. Merotomy is a wonderfully interesting subject. I would refer you to the experiments of Jacques Loeb on the Sea Anemone Cerianthus, a native of the Mediterranean, in which new tentacles could be produced by a lateral incision in the body of the animal. In some cases no mouth was formed. These new tentacles behave towards food exactly like the tentacles of the old mouth.

The Hydra as you have studied it was first discovered and briefly described by Leeuwenhoek in 1702. He described it as having six or eight horns, *i.e.*, tentacles. He also saw two small polyps attached to a parent and saw them become free. He did not understand the significance of this phenomenon, which was re-discovered by Trembley forty years later. This word Hydra introduces us to the word Polyp—the old Greek name for Cuttlefish. The word polyp you have already met in your Zoological studies; you will meet it again in connection with affections of the nose and other organs.

Trembley cut Hydras into minute pieces which grew into complete polyps. He joined fragments of different individuals and produced wonderful monstrosities.

INFUSORIA, VOLVOX AND CILIA.

Amongst the Protozoa there is a well-known group to which the name Infusoria is applied because they were first found in infusions of decaying organic matter. Leeuwenhoek really began the study of flagellate Infusorians—organisms which he found in rain water and pepper infusions. He also described green spheres which moved slowly and rotated as they moved, *i.e.*, the now well-known Volvox—a name also coined by Linnaeus, who in 1758 noticed several spheres within a large one, which escaped one by one through an opening in the parent sphere. When the young ones became free they began to swim about. In 1753 Harry Baker observed "short moveable hairs or bristles," which were the cause of the characteristic movements of the spheres. These "bristles" are really pairs of Cilia. This creature presents us with an example of progression by means of Ciliary motion, a subject of fascinating interest, which in earlier days was ardently pursued by Purkinje, Valentine, and in this country by William Sharpey.

MEDUSA.

What a romance hangs around the word Medusa, apart altogether from the deep scientific interest connected with these gems of the ocean with their pulsating bells or umbrellas, which offer problems for study comparable to those of the beat of the heart itself. Medusa—like Euryale—the latter represented to-day by a genus of starfishes—was one of the Gorgons. They were frightful female winged creatures, with repulsive teeth and brazen claws. Their names were Medusa, Euryale and Stheno. Just you look at a specimen of the starfish named Euryale, and you will at once perceive the justice of its classic name. The hair of their head was replaced by ghastly hissing living serpents, and so fearful were they that any one that

looked at them was immediately changed into stone. Medusa alone was mortal. Perseus by using, amongst other means and donations, the helmet of Pluto, which made him invisible, and the mirror given him by Athena or Minerva, in which he saw reflected the sleeping figures, succeeded in his task.

Finding the sisters three asleep, Perseus—thanks to the mirror of Minerva and the sickle he received from Mercury—was enabled to cut off the head of Medusa. Indeed, Perseus, by mirror vision, anticipated the operation for the removal of a disturbing growth from such a region as the larynx. The Laryngologist while operating on the vocal chords sees the objects reflected in a mirror placed at the back part of the throat and has to operate accordingly. Having secured the Medusa's head, Perseus placed it in the magic wallet, and by the aid of the winged sandals he received from Mercury he flew through the air laden with a not inconsiderable burden, all of which seems to show that ideation had already brought aviation within the bounds of imagination, the prelude to realisation under certain circumstances in our own times.

As Perseus flew through the air, the blood which dropped from the head of the slain Gorgon—which he carried on his back—gave rise to the innumerable race of serpents which for ages have infested the Lybian Desert. Your studies on Corals have already made you acquainted with the group known as the Gorgonidæ. Originally Medusa was celebrated for her personal charms, and, above all, for the beauty of her hair, which so excited the cupidity of Neptune, with dire results to the beauteous maiden. Minerva rose in her wrath, and the "Crowning glory of Woman" was replaced by hissing serpents. Even in Scriptural times you will find a strange story already set to music. Read and ponder well the Story of Samson, and his visit to the house of Delilah.

CYCLOPS AND THE CYCLOPEAN EYE.

What you have learned about the zoological affinities of the little aquatic animal the Cyclops will whet your appetite to trace the reason why this little creature should be dignified by the high-sounding name of those who assisted Vulcan and made armour for famous gods and heroes. Hesiod describes the Cyclops as those

> "Who forged the lightning shaft, and gave to Jove
> His thunder: they were like unto the gods,
> Save that a single ball of sight was fixed
> In their midforehead. Cyclops was their name,
> From that round eye-ball in their brain infixed!
> And strength, and force, and manual craft were theirs."

You will follow the story until you picture to yourselves the cave of Polyphemus, the most dreadful and hideous of the Cyclops, and recall the wiles whereby the Crafty Ulysses on his homeward journey after the fall of Troy extricated himself and such of his companions as survived the dread attention of this Cyclopean giant, and then your thoughts will wander to Turner's picture of Ulysses deriding the giant at break of day and setting sail once more to encounter new dangers.

Both amongst animals and man, young are occasionally born with a single central Cyclopean eye.

NAUTILUS.

The chambered Nautilus, "the ship of pearl," of Oliver Wendell Holmes, should be read when the student is introduced to the study of the Octopus and its allies. The inner meaning of the poem as reflected in the lines:

> "From thy dead life a clearer note is born
> Than ever Triton blew from wreathed horn"

and the fine outburst in the last verse should be deeply pondered. Nor must we forget to recall the story of the Argonauts and the Golden Fleece as first written in Greek years ago, and the version by Nathaniel Hawthorne of the famous hero Jason and the other nine and forty heroes who went in search of the Golden Fleece—of the dangers which men from all time have run in the search for gold. It matters little whether it goes by the name of Golden Fleece, or the more prosaic yet potent and simpler name of gold, the search is continued with even greater assiduity to-day.

THE BRAIN.

Take an organ such as the *Brain* and think out some of the analogies and ideas suggested by the names of its several parts. For the grey matter we now have the term "*pallium*," or mantle. The latter word recalls the mantle of the mollusca. The membranes, or meninges—dura, arachnoid and pia mater—bring to mind the references to these and other matters by Shakspeare, who was born in 1564 and died on the same day in the same year (1616) as his great contemporary Cervantes. To appreciate fully the references on medical topics in the works of Shakspeare it is necessary to remember that Vesalius, the Founder of Modern Anatomy, died about a year before Shakspeare's birth, and that Harvey's demonstration of the circulation of the blood was published about ten years after Shakspeare's death, so that Shakspeare lived and died before the epoch-making work of Harvey was given to the world.

At that period Eustachius—whose work is still commemorated in the Eustachian tube and valve—was still alive. Fallopius, who described the Aqueduct and Tubes that bear his name, was dead, but Fabricius ab Acquapendente—the teacher of Harvey—who described and figured most artistically the little doors or valves in the veins, though he entirely mistook their significance, was still teaching in Padua. It was a time of transition and of strife—indeed the Galenists and the followers of Paracelsus carried their unprofitable disputes well into the XVII. Century.

PIA MATER.

This membrane is referred to three times in the plays of Shakspeare:

Hol.—This is a gift that I have, simple, simple; a foolish extravagant spirit, full of forms, figures, shapes, objects, ideas, apprehensions, motions, revolutions; these are begot in the ventricle of memory, nourished in the womb of *pia mater*, and delivered upon the mellowing of occasion.

(*Love's Labour Lost*, iv. 2.)

"A most weak pia mater." (*Twelfth Night*, i. 5.)

"His pia mater is not worth the ninth part of a sparrow."

(*Troilus and Cressida*, ii. 1.)

THE ARACHNOID MEMBRANE.

Your studies on Spiders, besides many other interesting matters, will recall to you the Arachnoid membrane of the brain, as well as the story of Arachne, the Lybian Maiden of Colophon, who was greatly skilled in weaving. Greatly daring, and believing in her superior achievements in this art, she challenged Athena—Minerva—herself to compete with her. Arachne chose as a subject the story of the Amours of the Gods, and wove a piece of cloth so perfect that Athena herself could find no flaw in it. Athena tore it to tatters. Arachne, indignant and in despair, hanged herself. Athena ultimately saved her life, and by way of showing her spite changed Arachne into a spider—the animal most odious to Athena—and the rope by which Arachne suspended herself was changed into a spider's web.

VENTRICLES OF THE BRAIN.

The Ventricles were associated with memory in Vicary's "*Anatomie of the Bodie of Man*," issued in 1548. In the margin we find: "In the foremost Ventricle are the Five Wits; also the Fancy and the Imagination. In the 2nd or middle Ventricle is Thought. In the 3rd Ventricle is the Memory."

In the text, we read: "In the 3rd Ventrikle, and last, there is founded and ordeyned the vertue Memoratiue: in this place is registered and kept those things that are done and spoken with the senses."

Helkiah Crooke's "*Microcosmographia*" was published in London, 1616. (Preface dated 1615.) Printed by W. Jaggard.

In relation to the lateral Ventriele we have the *Hippocampus*—a name given by the ancient Greek writers to a fabulous animal which was supposed to resemble the foot of a horse. We have, however, still with us the beautiful fish known as the Hippocampus, which, unlike most other fishes, maintains an erect attitude in the water.

Perhaps some of you will ask: If Hippocampus is a "Sea horse," what is Hippocrates? Well, the meaning of this great name borne by the Father of Medicine is "Horse Dealer."

In relation to one of the Ventricles we have the Tænia semi-circularis; but tænia is only the name for a band, hence the name of the Common Tape Worm. The same name is given to the three flat longitudinal bands of muscular fibres which occur on the Colon. The Veins of Galen recall the epoch-making experiments of this great Physician—the founder of experimental Physiology—and his experiments on the effects of section of the intercostal nerves, of the spinal cord itself, of the spinal-accessory nerve, and also his experiments on the Ureters, to mention only a few of his physiological experiments. The Torcular Hierophili—the Wine press—takes us in thought across the Mediterranean to Alexandria, once a great seat of learning, as well as of commerce, under the Ptolemies.

That remarkable series of Anastomoses between arterial trunks at the base of the brain carries us forward to the XVII. Century and the work of Thomas Willis (1622-1675), who classified the Cranial nerves as nine pairs. I refer to what is known as the "Circle of Willis," but which perhaps is better described by the French nomenclature as the "Polygon of Willis." The edges of membranes remind us of the edge of a scythe, as represented by the word *falx*, and there are many other falcies in the body. The Pacchionian bodies which project into the longitudinal Sinus take us back to the XVII. and XVIII. Centuries, to Antonio Pacchioni (1689-1726), and his classical researches on the Dura Mater, and those remarkable structures which still bear his name, but which were called by him "Conglobate glands." He was born at Reggio in Sicily in 1665, also the birthplace of a still more famous man, viz., the Abbe Spallanzani. Pacchioni studied under

Marcellus Malpighi. Later, when residing in Rome, he became a friend of Lancisi, whose name is also associated with the structures in the brain that bear his name. Admitting all these discoveries, and the later one of the description of the communication known as the foramen of Monro (of Edinburgh), it remained for François Magendie in the XIX Century to discover and describe that foramen which bears his name, and which puts the fourth Ventricle into direct communication with the Sub-Arachnoid space, and thus unifies the lymphatic arrangements of the central nervous system.

THE SURFACE OF THE BRAIN.

The great landmarks on the brain surface known as the fissure of Sylvius and that by Rolando speak eloquently as to the observing power of de la Boe, Latinised as was the custom of the time as Sylvius (1478-1555), who taught in Paris in the XVI. Century. Rolando, however, belongs to the XIX. Century. His name is also associated with the cap of gelatinous-like matter which covers the posterior horn of the grey matter of the spinal cord. Appropriate sections of the brain reveal in the white matter the optic radiation of Gratiolet (1815-1865)—a keen, successful investigator and delineator of brain configuration and structure.

Purposely I have omitted to refer to such names as Vicq d'Azir, Gall, Broca, Fritsch, Hitzig, Ferrier, Hughlings, Jackson, and many others. By-and-bye you will learn to know the extent and importance of their researches.

THE EYE.

If the *Eye* be considered merely as an organ, without dealing with its functions, what a story even then it has to tell. It is an "apple," a "bulb," a "sphere," a "globe," protected by Eyelids furnished along their free margins with hairs known as Eyelashes or Cilia. The latter word, for want of a better term, is now restricted to microscopic hair-like vibrating projections of certain cells.

The Eyelashes and the margins of the Eyelids, however, require lubrication, and this is furnished by the secretion of the Meibomian glands (1666) of the lids themselves. (H. Meibomus, 1638-1700, of Helmstadt.) Perhaps you may remember the words in Thomas Hood's poem "Ruth":

> "Round her eyes her tresses fell,
> Which were blackest none could tell;
> But long lashes veil'd a light,
> That had else been all too bright."

I will not dwell on the obvious meaning of the word "Conjunctiva," the wonders of the Lachrymal Apparatus, or even refer to the sentiments said to be associated with the moulding and the shedding of a tear, with or without emotion. In any case, although the secretion of tears may seem copious, in reality it is not so. The concomitants are often more persuasive than the actual trickle of these spheroidal globules across their accustomed boundaries.

IMAGES, IRIS, PUPIL.

I also pass over the Eyebrows and the amorous sentiments and poetic effusions they have stimulated in susceptible subjects to ask you a simple question. Why should a circular orifice in a pigmented contractile membrane—the Iris—be called the "*Pupil*"?

The physical attributes of the beautiful reflecting mirrors represented by the curved surface of cornea and lens you will hear of later, but it is possible that some of you have already seen the image of your own features reflected from the Eye of a fellow creature; if not, the sooner you make the practical experiment the better! You need not "Wait and see." You can see without waiting. Perhaps you may see two images, but leave that aside. One image at least is erect, striking, bold, and superficial. It is the corneal image. The word "pupil" is derived from "pupa," meaning a small image, so that in more senses than one pupil and pupa are words well worthy of thought.

These same images reflected from two convex and one concave surface—for three images can be seen—formed the starting point of our knowledge regarding the mechanism of accommodation of the Eye for the vision of near and distant objects. These images are associated with the names of Purkinje of Prague, Sanson, Cramer, Helmholtz and others.

At once the question arises, Why are the refractive media of the Eye transparent? How are such transparent structures nourished? Is not blood opaque? Why should the Iris in an adult practically remain unchanged in its pigmentation while the scalp may shed its hairs, or the hairs may become grey—hairs that were once as black as jet or as a feather from a raven's wing? The temporal bone gets its name not from any association with temples made by hands, but with the word *tempus*, or time, because the older observers noticed that as age advances grey hairs usually begin to appear in that region which we call the temple.

In the song of two stanzas by Robert Burns, "*John Anderson, My Jo,*" the advance of age is depicted:

"Your locks were like the raven,
Your bonnie brow was brent,
But now your brow is beld, John,
Your locks are like the snaw,"

while the expressive phrase "lyart haffets" refers to the temples when the hair is beginning to change to grey.

CATARACT.

The word *Cataract* conveys its own meaning. The falling, rumbling, tumbling waters produce a spray which is particulate and therefore appears white—the clear, pellucid, swift-flowing stream in its descent becomes a spray. This the ancients could not fail to notice, nor, as knowledge accumulated, could they fail to observe that in certain cases of disease of the Eye the crystalline lens instead of being transparent presented in whole or in part a whitish appearance. The analogy was a natural one, and hence it comes that the word Cataract has its present significance when applied to the Eye.

To return to the Iris. What thoughts or recollections does the word arouse? Well, it all depends. To my mind the Iris is one of the most remarkable membranes—curtain or diaphragm as you please—in the whole body. It is unique in its pigmentation and its fascination and—in the stability of its colour scheme after a certain age—a pigmentation achieved nowhere else in the body. Go and look at the Eye in birds; neglect not the despised Toad with jewel in its head. Look at the ever-varying size of the pupil of a parrot, then pause and reflect.

THE BONES.

Even dry bones can be made to yield a certain amount of general interest, apart altogether from the study of them as a discipline, and from the application of a knowledge of Osteology to the requirements of the Surgeon or Physician.

The delicate poise of a beautiful head when properly regarded brings us back to the Atlas and the movement of this Vertebra carrying with it the head on the Axis or Vertebra dentata.

THE ATLAS.

Atlas, the king of Mauritania, the son of Jupiter, and brother of Prometheus, who sustained the Heavens upon his shoulders, was forewarned that he should be almost ruined by one of the sons of Jupiter. Perseus, as he pursued his flight across the Lybian Desert, sought shelter with Atlas, but was

rudely refused shelter. Perseus was carrying the head of Medusa—even in death the stony stare of the Gorgon was effective—and Atlas was instantly turned into a large mountain, a mountain so high that the ancients believed that it touched the Heavens. Atlas was also a famous astronomer, and the poets feigned that he sustained the Heavens on his shoulders. His seven daughters by his wife Pleione were stars in the firmament and were called by one common name, the "Pleiades," so renowned for their "sweet influences." ("Canst thou bind the sweet influences of the Pleiades?")

Hesperus was the brother of Atlas, and gives us our word Vesper, the Evening Star, which sets after the Sun. When it rises before the Sun, it is named Phosphorus or Lucifer, the Morning Star. Here you will get a glimpse of the reason why the old alchemists gave the name Phosphorus to this element, which was obtained in 1669 by Brand, a Hamburg alchemist, who distilled the residue from evaporated urine. He gave it the same name as the Bologna Stone, *i.e.*, *Phosphor.*

NAMES OF BONES.

Some bones get their name from their shape, such as the pisiform or pea-like bone, scaphoid or boat-like, clavicle like a key, vomer or ploughshare, sphenoid or wedge-shaped, with its pterygoid or wing-like processes. Diaphysis, although applied to the shaft of a bone, really means "the state of growing between" the epiphyses or the extremities of a large bone. The bones that sometimes occur in certain sutures of the skull are known as Wormian bones, after the Danish Anatomist, Olaus Wormius (1588-1654), who described them, though they were mentioned before his time by Andernach, of Strasburg. It was Th. Bartholinus, of Copenhagen, who called these bones "Ossa Wormiana."

The Calcaneum, or Os Calcis, comes from "Colcare" to tread under foot, and so it becomes the heel bone. Coccyx is said to owe its name to the fancied resemblance of the bone to a Cuckoo's beak, while the Sacrum is the sacred bone.

The Xyphoid process of the sternum is so named because of its resemblance to a sword. Our word "brisket"—or breast—comes from the French "Brechet," the common name of the ensiform cartilage of the breast bone. Patella comes from Patera, a bowl, and immediately recalls the familiar mollusc known as the Patella or Limpet. The Mastoid process of the petrous—hard or rock-part of the temporal bone—receives its name from its nipple shape, from the Greek word meaning a nipple. The Coracoid process of the Scapula was so named by Galen from its supposed resemblance to the beak of a crow.

ODD USES OF BONES.

Apart from the chemical products obtained from bones, many are the strange uses to which they are put. Where wood is scarce, as in the Falkland Islands, they are used as fuel. Bones are used to cook the beef steaks. The Arabs introduced into Spain the method of writing on the shoulder blades of sheep. The original Koran was inscribed on bones. Prayers are written on them and hung up in Holy Places by the Mongolians. In all ages, the supposed bones of the Saints have been greatly cherished and venerated. St. Andrews had its sacred bones, which attracted to it many pilgrims in days long gone by. Dean Buckland found that the bones of a Patron Saint were those of a goat and not of a human female, as alleged. The Scythians made drinking goblets from the skulls of their adversaries killed in war, while the Buddhist used skulls as prayer drums. The "*Linea Aspera*" may have already made you acquainted with some of the intricacies of what are called "insertions" of muscles.

MARROW BONES.

What a strange story would be a full account of "Marrow Bones" and all their associations from the "kitchen-midden" stage of human existence! The red marrow is the great factory of our red blood corpuscles and of some of the white cells of the blood.

THE LIGAMENTS.

The Ligaments ("*ligare*," to bind) and Connective Tissues generally do not at first sight seem so interesting. The word "*Aponeurosis*" (from the Greek word meaning a nerve) takes us back in thought to the Great Medical School of Alexandria which flourished in the early centuries of the Christian Era. It has nothing to do with nerves, but it indicates the period when nerves and tendons alike were called by one specific name. Both are white in appearance, and such structures were called by the name of "Neuron," which to-day has a very different meaning.

BOUQUET OF RIOLAN.

Some ligaments are named from their colour, *e.g.*, "subflava," some from their shape "teres" or round, some are "interosseous," others "articular," or "capsular," or "suspensory." Here may I refer to a little-known phrase, at least in this country, viz., "the bouquet of Riolan" (1580-1657). I have asked a good number of professed Anatomists

in this country, but not one of them knew anything about it. It takes us to the time of Riolan, who was a contemporary of Harvey as well as an opponent of Harvey's doctrine of the circulation of the blood. The "*Bouquet of Riolan*" has reference to the muscles and ligaments—red and white structures—that arise from the styloid process of the temporal bone.

Some bear the names of Anatomists, such as Poupart, of Le Mans (1616-1708), although it was known also by the name of Vesalius and Fallopius. Its continuation is known as Gimbernat's ligament. Don Antonio Gimbernat was Professor in Barcelona (1762-1774) and afterwards in Madrid. The treatise in which he described this ligament, "*Nuevo metodo de operar en la hernia crural*," was published in Madrid in 1793, and translated into English by Th. Beddoes in 1795.

The most interesting, however, from the legendary point of view, is the "*Tendo Achillis.*"

THE TENDO ACHILLIS.

Achilles, the principal hero of the "Iliad"—the handsomest and bravest of the Greeks—was the son of Peleus by the Nereid Thetis. When he was an infant, his mother plunged him into the waters of the Styx, which made his whole body invulnerable, excepting the ankles, by which she held him. Knowing and fearing greatly, his mother took pains to conceal him, disguising him by clothing him in female garments and placing him amongst the daughters of King Lycomodes, with what results those who are interested can read. The cunning, resourceful, crafty Ulysses, however, in the guise of a merchant, reached the Palace and displayed his wares before the admiring eyes of the members of the Court. The ladies selected jewels and gems, but one, who, of course, was Achilles, disdained the gems and seized the sword, thus betraying his manly inclinations. Rescued from his inglorious ease, Achilles, the hero of the Trojan War, joined the expedition against Troy. The story of his valour is known to all as told in the Homeric legend. Inflamed by the sight of Polyxena, a daughter of Priam, he went without arms to the Temple of Apollo at Thymbra, where he was slain by Paris, who shot him in the heel with an arrow, the only part of his body not rendered invulnerable by being dipped in the Styx. A similar legend hangs round the Mistletoe and Balder, who was killed by an arrow made from the mistletoe.

THE MUSCLES.

The muscles at once introduce us to the mouse; in fact, to a "musculus," or little mouse. Some muscles are named

according to their action as flexors and extensors, adductors, and abductors, and so on. It would be difficult to illustrate the insufficiency of a physiological or functional classification based on a study of anatomical connections better than by a reference to such terms as flexors and extensors. We now know that when a limb is flexed, not only are the flexors in action, but there is simultaneous inhibition of the extensors, what is called "reciprocal innervation" of the muscles.

Every one of you knows the Sartorius, or tailor's muscle. Some get their name from their shape, such as the splenius, or strap-shaped muscle, the trapezoid, the deltoid from its resemblance to Greek capital letter. The Buccinator, or trumpeter's muscle, has other functions besides being chiefly concerned in "sounding the trumpet." Its name at once recalls the Buccinum, or whelk, and its trumpet-like form. The name of its neighbour, the Masseter, one of the powerful muscles concerned in mastication, comes from the Greek word meaning to chew.

Biceps implies a two-headed muscle, whether it be the brachial biceps, the Biceps flexor cubiti, beloved by schoolboys, and the pride of the Fancy, or the Biceps flexor cruris, which from its position enjoys no such reputation or adoration as its namesake of the upper limb.

There are muscles with three surfaces of origin—the Triceps, or three-headed muscle, and there is even a Quadriceps, which plays such an important part in that phenomenon known as the "Knee-jerk," which normally is elicited when the patellar tendon is struck or tapped. The absence of the Knee-jerk is an important diagnostic sign, depending as it does on the integrity of the reflex spinal arc associated with this composite muscle.

BOTANICAL TERMS: ACONITE, OR WOLF'S BANE.

If we turn to Botanical lore, the field is so vast that I can only select a few samples. I will take three.

The Aconite, or Deadly Night-shade, is associated with the last of the labour of Hercules, who was commanded by Eurystheus to go down into Hades and bring away the triple-headed dog Cerberus, who guarded the portals of the kingdom of Pluto. He secured Cerberus with a triple chain, and by force brought him to the light of day. On seeing the light Cerberus vomited, and from this sprang the flower known as Wolf's Bane. Hecate and her daughters Medea and Circe, according to Greek legend, were the discoverers of many poisons.

Their home was the Island of Colchis, and our drug Colchicum, long supposed to have venomous properties, gets its name from this island. The plant itself was discovered by Medea, while to Hecate is ascribed the earliest use of Aconite

BELLADONA.

Belladonna will at once conjure up mixed feelings, aspirations and memories, pleasant or otherwise. Disguised as Atropa Belladonna, other thoughts are suggested. Atropa was the eldest of the three Fates—Clotho, Lacheses and Atropa—or as they were jointly called the Moiræ, a word which signifies a " share." Thus these deities assigned to every man his fate or his share. Clotho, according to Hesiod, spins the thread of life; Lachesis assigns to man his fate. While Atropa—the unchangeable—the unalterable—is the fate that cannot be avoided—she cuts the thread of life with her scissors. The Moiræ, therefore, have to deal with birth and death—the beginning and the end as well as with the whole course of the earthly existence of mortals. Clotho is usually represented with a roll, or book of fate, or a spindle, Lachesis with a staff pointing to the horoscope on the globe, and Atropa with a pair of scales or a pair of scissors.

The actions of Belladonna on the eyes as a dilator of the pupil, and on the ciliary muscle, on the heart, the terminations of certain nerves, on secretions and its antagonistic action in relation to other drugs will perhaps acquire a new interest when linked up with the story of these three powerful goddesses of Mythology.

It is said to have got its name because Italian ladies made from its berries a comestic wherewith to whiten their complexions, while the Spanish ladies made use of it to dilate the pupils of their brilliant black eyes.

ARISTOLOCHIA.

Like many other plants the Genus Aristolochia—derived from Aristos (" excellent "), and Lochia (" childbirth "), or the lochia consequent on it—gets its name from its supposed physiological action. It was credited with accelerating the expulsion of the placenta and exciting the lochial discharge.

DOCTRINE OF SIGNATURES.

Those of you who are interested in Medical lore will find in the Doctrine of Signatures an interesting subject. It was supposed that the external characters of plants indicated the particular diseases which they were supposed to cure—a doctrine of course that " led to serious errors in practice."

NOMENCLATURE FROM RESEMBLANCES.

The Olive gave its name to the olivary body, the Cone to the Conarium, or Pineal body, the Pea to the pisiform bone.

Bulb from the Latin "Bulbus," or Greek "*βολβος*," *e.g.*, of an onion, which has a resemblance to the root of a bulbous plant, is used for the bulb or root of a hair, bulb of the urethra —bulb or globe of the eye, "the Bulb," or Medulla oblongata.

The Tonsils get their name from the resemblance in shape to almonds, and are the amygdalæ.

Cup—as calyx—finds its use both in Anatomy and Botany—in the calices of the kidney and the calyx of flowering plants as well as in "Chalice Cells." A basin is the equivalent of pelvis.

SOME DERIVATIONS, CÆSAREAN SECTION, AGRIPPA.

The derivation and meaning of the following words are interesting:—

Asphyxia is one of those words which, like Artery—literally an air-vessel—has changed its signification. It is derived from *a* privative and *σφυξ*, the pulse. It originally meant pulselessness and therefore apparent death, and for a long time it meant suppression of the pulse, and cessation, or at least suspension, of the heart beat.

Autopsy has also changed its meaning. It really means "self-seeing," the act of examining for one's self by personal inspection. With us it has become equivalent to that objectionable term "post-mortem examination."

Azygos, as applied to a muscle of the uvula, and the vein of the same name, really means unpaired, and comes from *ζυγος*, a yoke.

Apothecary comes from the Greek word Apotheke, a shop. In Romeo and Juliet, Shakspeare depicts a son of the pestle when "sharp misery had worn him to the bones."

> "Above his shelves,
> A beggarly account of empty boxes,
> Green earthen pots, bladders and musty seed,
> Remnants of pact thread, an old cask of roses,
> Were thinly scattered, to make up a show."

The word was used in the earlier Bibles in the Old Testament. In Exodus the holy anointing oil is directed to be made "after the art of the apothecary." The revised version renders the phrase, "the art of the perfumer."

The Carotid arteries are called by Vesalius "arteriæ soporales," from κάρος drowsiness, sopor or stupor. Unconsciousness was produced in animals and man by compressing the carotids, when certain operations were performed on young men, or when mountebanks used animals like the goat to show their supposed magical powers over the life of an animal.

Climacteric originally meant every seventh year of human life, while the sixty-third year—a multiple of seven by nine—was regarded as peculiarly dangerous, and was called the "*Grand Climacteric.*"

Equally interesting is the story of *Cæsarean Section*—an operation said by Pliny to have been practised upon the mother at the birth of the first of the Cæsars, who from the circumstance derived his surname (Latin Cædere, "to cut.")

It also furnished to Shakspeare in "Macbeth," the device whereby though slain by Macduff, Macbeth yields not his life to one of woman born. Macbeth says:—

> "I bear a charmed life, which must not yield,
> To one of woman born."

Macduff replies:—

> "Despair thy charm,
> And let the angel whom thou still has served
> Tell thee Macduff was from his mother's womb
> Untimely ripped."

The familiar word *Bistuary*—the gladius Pistoriensis—got its name from the town of Pistori, celebrated for the fabrication of these instruments.

Still more remarkable, however, is the origin of the word *Agrippa.* At birth usually the head presents and descends first. In some cases, however, the feet present and the infant comes into the world with the feet first The word Agrippa is said to come from two words meaning "Capture" and "Foot." In any case, such a mode of entrance into the world was regarded as an unfavourable omen. M. Vipsanius Agrippa, son-in-law of Augustus, is said to have been so born. The two Agrippinas, the mothers respectively of Caius and Domitius Nero, "proved very curses to the earth." Pliny quaintly remarks: "It is in the due order of Nature that man should enter the world with the head first, and be carried to the tomb in a contrary fashion."

DEATH. STRANGULATION.

The physiologist has also to discuss the question of Death, a phenomenon of surpassing interest. To many "Mors janua vitæ" is its true interpretation. The old view of Bichat in his famous Treatise, "Recherches physiologiques sur la Vie et la Mort," that death comes from failure of brain, heart, or lungs, is in a large measure true. The picture of death from the lungs, *i.e.*, by strangulation, is vividly portrayed by Shakspeare, in the following quotation:—

"*War*: See how the blood is settled in his face,
Oft have I seen a timely-parted ghost,
Of ashy semblance, meagre, pale and bloodless,
Being all descended to the labouring heart;
Who, in the conflict that it holds with death,
Attracts the same for aidance 'gainst the enemy;
Which with the heart there cools, and never returneth,
To blush and beautify the cheek again.
But, see, his face is black, and full of blood;
His eye-balls further out than when he lived,
Staring full ghastly like a strangled man:
His hair uprear'd, his nostrils stretched with struggling;
His hands abroad display'd, as one that grasp'd
And tugg'd for life, and was by strength subdued.
Look, on the sheets his hair, you see, is sticking;
His well-proportioned beard made rough and rugged,
Like to the summer's corn by tempest lodg'd,
It cannot be but he was murder'd here.
The least of all these signs were probable."

II. Henry VI., iii. 2.

FACIES HIPPOCRATICA.

I would strongly recommend you to read some of the famous chapters in the works of Hippocrates: the "*Facies Hippocratica*" in the Prognostics, a description of the facial appearance signalising the onset of death. I venture to quote it:—

"He should observe in acute diseases: first, the countenance of the patient, if it be like those of persons in health, and more so, if like itself, for this is the best of all; whereas the most opposite to it is the worst, such as the following: *A sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the colour of the whole face being green, black, livid, or lead coloured.*"

The description by Shakspeare of the death of Falstaff is one also that you should commit to memory.

"For after I saw him fumble with the sheets, and play with the flowers, and smile upon his finger's ends, I knew there was but one way: for his nose was as sharp as a pen, and he babbled of green fields. So he bade me lay more clothes on his feet. I put my hand into the bed and felt them, and they were as cold as a stone," etc.—*Henry V.*, ii. 3.

The power of accurate observation is one of the most difficult arts to acquire. It has been said that an observer sees only what he brings the power to see.

I have quoted the description of approaching death as revealed in the countenance, because though Physiognomy itself in its original meaning is out of date, there is much to be learned and inferred from the appearance of the face and general attitude and appearance of a person affected with some diseased condition—observations that can be made without any reference to the use of the more exact instruments of physical diagnosis.

Cultivate the art, it will on many occasions stand you in good stead in matters other than questions purely medical.

SENILE DECAY.

To others again the approach of death comes under a different guise. This is graphically described by Shakspeare in the "Seven Ages of Man," in the words which in "As you like it," he puts into the mouth of Jaques. I quote the sixth and last ages:—

"The Sixth Age shifts
Into the lean and slipper'd pantaloon;
With spectacles on nose, and pouch on side;
His youthful hose well saved, a world too wide
For his shrunk shank; and his big manly voice,
Turning again toward childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange eventful history,
Is second childishness, and mere oblivion;
Sans teeth, sans eyes, sans taste, sans everything."
As You Like It, ii. 7.

CONCLUSION.

In conclusion, to turn once more to "As you like it," if you wish in old age to be "strong and lusty" follow well the precepts of Adam, the servant of Oliver, and apply not hot and rebellious liquors to your blood, nor with unbashful forehead woo the means of weakness and debility.